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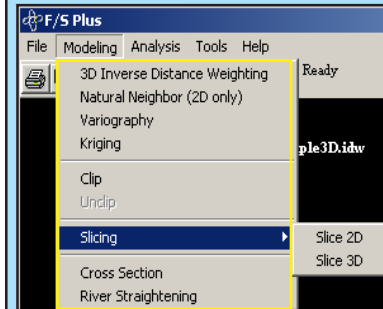
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 77 W. Jackson Blvd.
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 Chicago, IL 60604

FIELDS Tools Software download site:
<http://www.epa.gov/region5fields/>

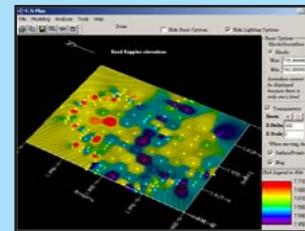


F/S Plus Cont.

Modeling

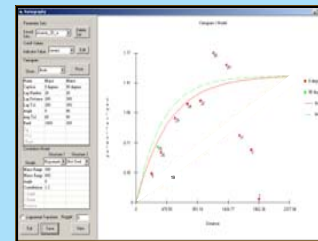


Interpolation Methods

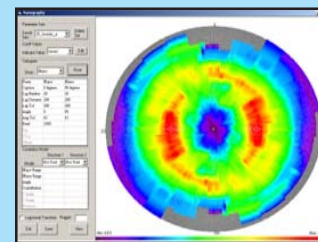


IDW
 (Inverse Distance Weighting)

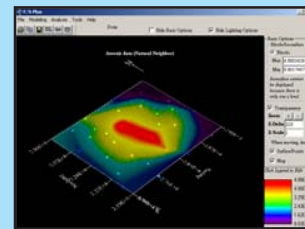
Variography



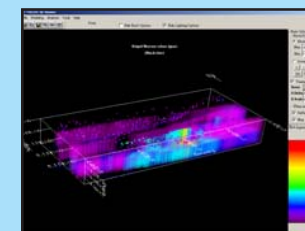
Variogram Model



Variogram Map

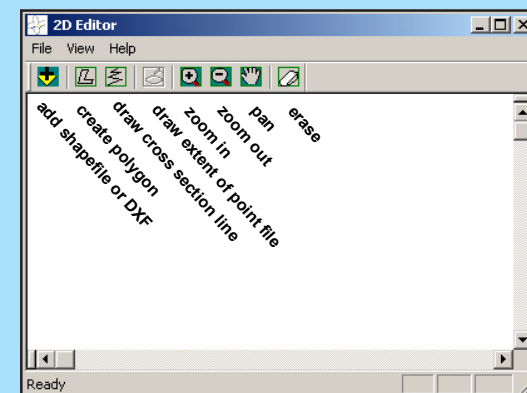


Natural Neighbor



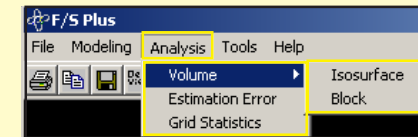
Kriging

2D Editor

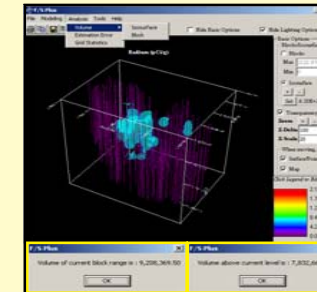


F/S Plus Cont.

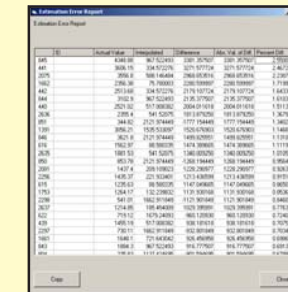
Analysis



Volume Estimation



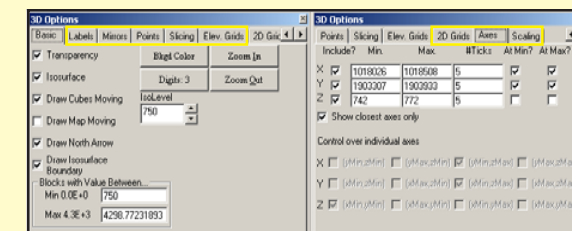
Estimation Error



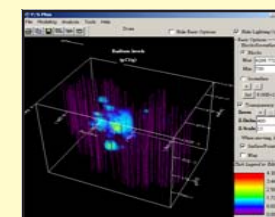
Grid Statistics

Average:	39.9221
Standard deviation:	148.8737
Minimum:	0.0000
Maximum:	2,121.9744

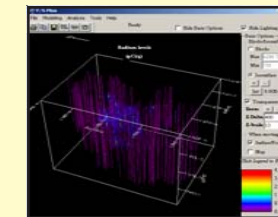
3D Options



Block View



Isosurface View



The FIELDS Team

System



FIELDS
 Field Environmental
 Decision Support

**An innovative approach to
 support, enhance, and
 communicate
 environmental decisions.**

FIELDS Overview

The FIELDS Team has developed a set of tools that integrate the power of geographic information systems (GIS), imaging software, global positioning system (GPS), and in-field sampling and analysis technology. The FIELDS tools are a collection of ArcView extensions and a stand-alone F/S Plus Software that utilize published methodology for each step in the characterization process. The FIELDS software forms the foundation for a system that provides data analysis and interpretation for environmental decision-making. The results allow project managers to evaluate the extent of contamination and hot spot sizes, estimate health risks, prioritize site goals, and weigh potential actions. Users include USEPA Regions, NOAA's coastal restoration scientists, State and Tribal agencies, as well as the private and academic community. The FIELDS Tools can be used for any application that utilizes analytical spatial data. The applications may include precision farming, urban planning, biological studies, etc.

FIELDS Tools Software Functions

Sample Design

Random, systematic, secondary sampling; GPS upload

Database Query

Data import, processing, queries

Modeling

Transformations; cross validation (for IDW) and natural neighbor contouring

Analysis Tools

Error Estimation, mass/volume, remediation, human and ecological risk assessment

F/S Plus

2D/3D data viewing, contouring, editing, slicing, cross-section

FIELDS Help

Documentation, definitions, procedures

FIELDS Software System Requirements

- ◆ArcView 3.X
- ◆ArcView Spatial Analyst 1.X or 2.X
- ◆Windows (95, 98, NT, ME, 2000, XP)

Sample Design



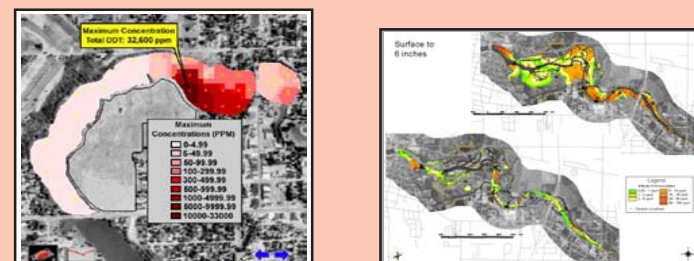
The Sampling module allows the user to create statistically-based sampling plans in GIS. The module can determine how many samples should be taken and then place the sampling locations on a basemap. The latitude and longitude information can be easily exported into a GPS unit, allowing the user to immediately navigate to sampling points for data collection.

Database Query



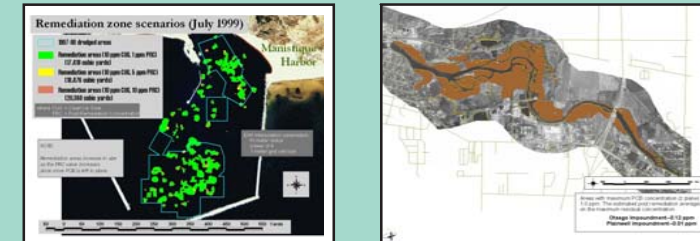
The Database Module allows the user to input data from STORET, EQUiS, Query Manager, or FIELDS-defined databases. The interface provides 2D and 3D queries in a format ready to use in other FIELDS modules.

2D-Modeling



The Modeling Module allows the user to apply various interpolation methods and analysis on sample data necessary for contouring data. These methods and QA procedures include IDW, Natural Neighbor, Cross-Validation, and Error Estimation.

Data Analysis



*The **FIELDS Remediation Tool** calculates the area required to be removed in order to meet a site-wide clean-up goal or meet a block-based clean-up goal.*

The *FIELD*S Mass and Volume Tool calculates the mass of contaminant in soil or sediment, and the volume of contaminated material based upon user defined intervals.

FIELDS Benefits

- ❖ Standardization:
 - Reproducible
 - Transparent
 - Defendable
 - Provides process continuity
- ❖ Flexibility:
 - Iterative analysis
 - Real-time decision-making
 - Remediation alternatives
- ❖ Communication:
 - Visualization
 - Documentation
 - Reports (results, maps, graphics)

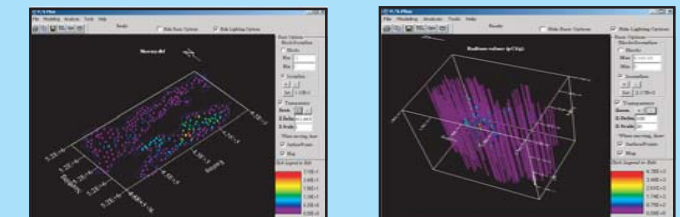


F/S Plus

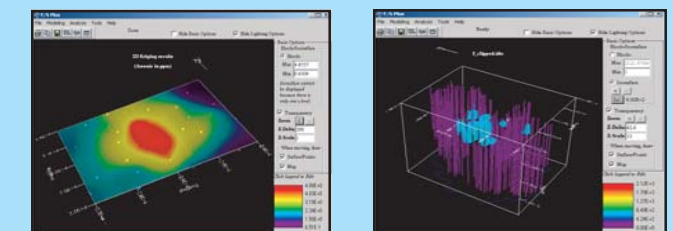
F/S Plus is a stand-alone, 2D/3D data display and analytical tool that incorporates various GIS capabilities:

- ❖ *Data files (point, line, polygon, and grid files) import and display*
- ❖ *Data interpolations using three different methods: IDW, Kriging, and Natural Neighbor (NN is 2D only)*
- ❖ *Viewing of resulting 2D and 3D grids as “blocks” or “isosurfaces”*
- ❖ *Volume estimation (Isosurface or Block Range)*
- ❖ *Clipping (top, bottom, and lateral)*
- ❖ *3D grid slicing and export to ArcView*
- ❖ *Cross-section creation*
- ❖ *Polygon builder tool*
- ❖ *View editing functions (e.g., zoom, transparency, point size)*

File Importing



2D and 3D point files as DBF



2D/3D grid files from F/S Plus and 2D grids from ArcView/ArcInfo